

Borehole

# 60-00-10

Log Event A

## Borehole Information

Farm : <u>U</u>	Tank : <u>U</u>	Site Number : <u>299-W18-53</u>
N-Coord : <u>38,135</u>	W-Coord : <u>75,908</u>	TOC Elevation : <u>664.93</u>
Water Level, ft :	Date Drilled : <u>11/30/1944</u>	

## Casing Record

Type : <u>Steel-welded</u>	Thickness, in. : <u>0.365</u>	ID, in. : <u>10</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>150</u>	
Type : <u>Steel-welded</u>	Thickness, in. : <u>0.500</u>	ID, in. : <u>12</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>50</u>	

Cement Bottom, ft. : 150      Cement Top, ft. : 148

## Borehole Notes:

This borehole was drilled in 1944 and completed with a 12-in.-nominal-diameter steel casing with a presumed thickness of 0.406 in. to a depth of 50 ft. A 10-in.-nominal diameter steel casing was placed inside the 12-in. casing to a depth of about 150 ft. It is not known if the 12-in. casing remains in the borehole. The 10-in. casing was perforated with 0.5-in. by 3-in. slots, 6 around on 12-in. centers, and staggered from 48 to 148 ft. A cement plug was placed in the bottom of the casing.

## Equipment Information

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>10/1995</u>	Calibration Reference : <u>GJPO-HAN-3</u>	Logging Procedure : <u>P-GJPO-1783</u>

## Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>11/9/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>18.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>11/10/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>146.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>49.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

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Log Run Number :	<u>3</u>	Log Run Date :	<u>11/13/1995</u>	Logging Engineer:	<u>Bob Spatz</u>
Start Depth, ft.:	<u>17.0</u>	Counting Time, sec.:	<u>100</u>	L/R :	<u>L</u> Shield : <u>N</u>
Finish Depth, ft. :	<u>51.0</u>	MSA Interval, ft. :	<u>0.5</u>	Log Speed, ft/min.:	<u>n/a</u>

## Analysis Information

Analyst : P.D. Henwood

Data Processing Reference : P-GJPO-1787

Analysis Date : 5/21/1996

### Analysis Notes :

This borehole was logged in three log runs. The pre- and post-survey field verification spectra show consistent activities, indicating the logging system operated properly during data collection. Energy calibrations differed because of gain drift in the instrumentation. Gain drifts during data collection necessitated energy versus channel number recalibrations during processing of the data to maintain proper peak identification. Depth overlaps, where data were collected on separate days at the same depth, occurred in this borehole at about 18 and 50 ft. The calculated concentrations were within the statistical uncertainty of the measurements, indicating very good repeatability.

The casing thickness from 50 to 146.5 ft is presumed to be 0.365 inch (in.), on the basis of the published thickness for schedule-40, 10-in. steel casing. Casing-correction factors for a 0.365-in.-thick steel casing were applied during analysis. For depths from 0 to 50 ft, it was assumed the 10-in. casing was inside the 12-in. casing. A casing correction of 0.675 in. was used for this depth interval. However, if the 12-in. casing has been removed from the borehole, the concentrations will be overestimated at depths of 0 to 50 ft. Concentrations could not be quantified for U-238 and Th-232 at some depth locations above 50 ft. The log analysis software peak search routine was unable to identify peaks and quantify the concentration. This is probably the result of double casing in the borehole that significantly attenuated the gamma rays.

Cs-137 is the only man-made radionuclide identified in this borehole. The presence of Cs-137 was measured from 0 to 2.5 ft, 53.5 to 55 ft, and at intermittent locations in the borehole at concentrations near the MDL. The maximum concentration was about 6 pCi/g at the ground surface. Concentrations measured below about 0.5 ft are less than 1 pCi/g.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank U-106.

### Log Plot Notes:

Separate log plots show the man-made (e.g., Cs-137) and the naturally occurring radionuclides (K-40, U-238, and Th-232). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes both the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.



Spectral Gamma-Ray Borehole  
Log Data Report

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Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the minimum detection level (MDL). The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.